Complete Summary

GUIDELINE TITLE

Practice parameters for the use of actigraphy in the assessment of sleep and sleep disorders: an update for 2007.

BIBLIOGRAPHIC SOURCE(S)

Morgenthaler T, Alessi C, Friedman L, Owens J, Kapur V, Boehlecke B, Brown T, Chesson A Jr, Coleman J, Lee-Chiong T, Pancer J, Swick TJ, Standards of Practice Committee, American Academy of Sleep Medicine. Practice parameters for the use of actigraphy in the assessment of sleep and sleep disorders: an update for 2007. Sleep 2007 Apr 1;30(4):519-29. [28 references] PubMed

GUIDELINE STATUS

This is the current release of this guideline.

This guideline updates a previous version: American Sleep Disorders Association. Practice parameters for the use of actigraphy in the clinical assessment of sleep disorders. Sleep - Europe 1995 May;18(4):285-7.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

- Insomnia, including insomnia associated with depression
- Circadian rhythm abnormalities
- Sleep related breathing disorders, including obstructive sleep apnea syndrome
- Advanced sleep phase syndrome (ASPS)
- Delayed sleep phase syndrome (DSPS)
- Shift work sleep disorder

- Hypersomnia

GUIDELINE CATEGORY

Diagnosis
Evaluation

CLINICAL SPECIALTY

Internal Medicine
Neurology
Psychiatry
Sleep Medicine

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To provide an updated, evidence-based review of the use and indications for actigraphy in the evaluation of sleep and sleep disorders

TARGET POPULATION

Adults, older adults living in the community, older nursing home residents, and infants and children with known or suspected sleep disorders

INTERVENTIONS AND PRACTICES CONSIDERED

Actigraphy

MAJOR OUTCOMES CONSIDERED

Clinical utility of actigraphy for diagnosing sleep disorders and measuring treatment efficacy.

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A computerized search was performed using the search terms actigraph, actigraphy, actigraphic monitoring, actigraphic recording, actimeter, actometer, wrist activity, rest activity, or sleep-wake and found 3641 titles. These were then cross-checked with 32,211 titles found using the search terms: sleep disorders,

circadian rhythm, or sleep, to yield 1884 titles. This total was then limited to those published between 2001 and 2005 with a minimum of 8 subjects studied by actigraphy, those in English, those from the core clinical journals, and those with emphasis on diagnosis (using the Ovid search engine) as a modifier to yield 155 articles. After review of abstracts from these articles to determine if they met inclusion criteria, plus of articles identified by pearling, a total 108 articles (see accompanying evidence table) were included.

NUMBER OF SOURCE DOCUMENTS

108 articles were included

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Evidence Levels

1. Blind, prospective comparison of results obtained by actigraphy to those obtained by a reference standard* on an appropriate spectrum of subjects and number of patients.
2. Comparison of results obtained by actigraphy to those obtained by a reference standard* but blinding not specified, not prospective, or on a limited spectrum of subjects or number of patients.
3. Comparison of results obtained by actigraphy to the mean value of a reference standard*, but not direct within-subject comparison, or otherwise methodologically limited.
4. Actigraphy compared to nonstandard reference or group differences shown:
    a. Adequate comparison of results obtained by actigraphy to those obtained by a non-standard reference*; or
    b. Actigraphy not compared to any reference, but actigraphy results demonstrated ability to detect significant difference between groups or conditions in well-designed trial.

5. Actigraphy not adequately compared to any reference, and either
    a. Actigraphy not used in a well-designed trial, or
    b. Actigraphy used in such a trial but did not demonstrate ability to detect significant difference between groups or conditions.

* Reference standards for actigraphic evaluation of sleep and circadian rhythms varied by diagnostic category, and included generally accepted "gold standards," applied in an acceptable manner. By diagnostic category, reference standards for insomnia included polysomnography (PSG) and/or sleep logs; for circadian rhythm sleep disorders, PSG, phase markers, and/or sleep logs; for sleep apnea, PSG; for restless legs syndrome and periodic limb movements during sleep, PSG; for infants, caregiver reported observations; for elderly or demented persons, phase markers, sleep logs, and/or caregiver reports; and for healthy controls, PSG,

phase markers, or sleep logs. Nonstandard references include such items applied outside their diagnostic category, or other experimental monitors.

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Initial data extraction, preliminary evidence grading in accordance with the standards in Table 1 in the original guideline document, and initial data entry into evidence tables was performed by professionals commissioned by the American Academy of Sleep Medicine Standards of Practice Committee (AASM SPC) to expedite the review process. This classification of evidence, based on suggestions of Sackett is similar to that of the prior review and practice parameter paper commissioned by the AASM SPC. Some modifications of evidence level criteria were applied by the AASM SPC to this update of the practice parameters for actigraphy to insure the evidence classification was in keeping with recent updates in the literature for the field of evidence grading (see Table 1 in the original guideline document). All evidence table entries were reviewed and, if appropriate, revised by AASM SPC content experts. Thus, all evidence grading was performed by independent review of the article by two experts, including members of the SPC; areas of disagreement were addressed, and, if needed, the chair of the AASM SPC arbitrated the final decision on evidence level.

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The American Academy of Sleep Medicine Standards of Practice Committee (AASM SPC) developed the recommendations included in this paper. In all but one condition, that regarding the use of actigraphy in hypersomnia, the recommendations were based on evidence from studies published in peer-reviewed journals that were evaluated as noted above and specified in the description accompanying each recommendation. In developing the recommendation regarding use of actigraphy in hypersomnia, there was insufficient scientific data, but the Standards of Practice Committee felt clinical guidance was indicated for use of actigraphy in this condition, so the Rand/University of California Los Angeles (UCLA) Appropriateness Method was used to develop the recommendation by identifying the degree of agreement among the sleep experts in the SPC after review of the limited data available. The Rand/UCLA Appropriateness Method combines the best available scientific evidence with the collective judgment of experts to yield statements regarding the appropriateness of performing procedures. Our expert panel rated the appropriateness of this indication in two rounds by individually completing rating sheets. Based on these ratings, we classified the indication as appropriate, uncertain, or inappropriate. We determined that if there were strict agreement that the procedure was appropriate, it would be assigned an "option" level recommendation. The certainty of all the other recommendations was assigned

according to available evidence levels, as noted in Table 2 in the original guideline document.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

American Academy of Sleep Medicine (AASM) Levels of Recommendations

Standard: This is a generally accepted patient-care strategy, which reflects a high degree of clinical certainty. The term standard generally implies the use of Level 1 evidence, which directly addresses the clinical issue, or overwhelming Level 2 evidence.

Guideline: This is a patient-care strategy, which reflects a moderate degree of clinical certainty. The term guideline implies the use of Level 2 evidence or a consensus of Level 3 evidence.

Option: This is a patient-care strategy, which reflects uncertain clinical use. The term option implies either inconclusive or conflicting evidence or conflicting expert opinion.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The American Academy of Sleep Medicine (AASM) Board of Directors (BOD) approved these recommendations.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The levels of recommendations (Standard, Guideline Option) and levels of evidence (I-V) are defined at the end of the "Major Recommendations" field.

Use of Actigraphy in the Evaluation of Sleep Disorders

Actigraphy is a valid way to assist in determining sleep patterns in normal, healthy adult populations (Standard), and in patients suspected of certain sleep disorders. (**Option-Guideline-Standard**; see specific parameter below)

Actigraphy is indicated to assist in the evaluation of patients suspected of advanced sleep phase syndrome (ASPS), delayed sleep phase syndrome (DSPS), and shift work sleep disorder (Guideline); and circadian rhythm disorders,

including jet lag and non-24-hour sleep/wake syndrome [including that associated with blindness] (**Option**)

When polysomnography is not available, actigraphy is indicated as a method to estimate total sleep time in patients with obstructive sleep apnea syndrome. Combined with a validated way of monitoring respiratory events, use of actigraphy may improve accuracy in assessing the severity of obstructive sleep apnea compared with using time in bed. (**Standard**)

Actigraphy is indicated as a method to characterize circadian rhythm patterns or sleep disturbances in individuals with insomnia, including insomnia associated with depression. (**Option**)

Actigraphy is indicated as a way to determine circadian pattern and estimate average daily sleep time in individuals complaining of hypersomnia (**Option**).

Use of Actigraphy in Assessing the Response to Therapy of Sleep Disorders

Actigraphy is useful as an outcome measure in evaluating the response to treatment for circadian rhythm disorders. (**Guideline**)

Actigraphy is useful for evaluating the response to treatment for patients with insomnia, including insomnia associated with depressive disorders. (**Guideline**)

Use of Actigraphy in Special Populations and Special Situations

Actigraphy is useful for characterizing and monitoring sleep and circadian rhythm patterns and to document treatment outcome (in terms of sleep patterns and circadian rhythms) among older adults living in the community, particularly when used in conjunction with other measures such as sleep diaries and/or caregiver observations. (**Guideline**)

Actigraphy is indicated for characterizing and monitoring sleep and circadian rhythm patterns and to document treatment outcome (in terms of sleep patterns and circadian rhythms) among older nursing home residents (in whom traditional sleep monitoring by polysomnography can be difficult to perform and/or interpret). (**Guideline**)

Actigraphy is indicated for delineating sleep patterns, and to document treatment responses in normal infants and children (in whom traditional sleep monitoring by polysomnography can be difficult to perform and/or interpret), and in special pediatric populations. (**Guideline**)

Definitions:

Levels of Recommendations

Standard: This is a generally accepted patient-care strategy, which reflects a high degree of clinical certainty. The term standard generally implies the use of

Level 1 evidence, which directly addresses the clinical issue, or overwhelming Level 2 evidence.

Guideline: This is a patient-care strategy, which reflects a moderate degree of clinical certainty. The term guideline implies the use of Level 2 evidence or a consensus of Level 3 evidence.

Option: This is a patient-care strategy, which reflects uncertain clinical use. The term option implies either inconclusive or conflicting evidence or conflicting expert opinion.

Evidence Levels

1. Blind, prospective comparison of results obtained by actigraphy to those obtained by a reference standard* on an appropriate spectrum of subjects and number of patients.
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3. Comparison of results obtained by actigraphy to the mean value of a reference standard*, but not direct within-subject comparison, or otherwise methodologically limited.
4. Actigraphy compared to nonstandard reference or group differences shown:
    a. Adequate comparison of results obtained by actigraphy to those obtained by a non-standard reference*; or
    b. Actigraphy not compared to any reference, but actigraphy results demonstrated ability to detect significant difference between groups or conditions in well-designed trial.

5. Actigraphy not adequately compared to any reference, and either
    a. Actigraphy not used in a well-designed trial, or
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CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified for each recommendation (see "Major Recommendations" field).

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate use of actigraphy, both as a diagnostic tool in the evaluation of sleep disorders and as an outcome measure of treatment efficacy in clinical settings with appropriate patient populations

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

These practice parameters define principles of practice that should meet the needs of most patients in most situations. These guidelines should not, however, be considered inclusive of all proper methods of care or exclusive of other methods of care reasonably expected to obtain the same results. The ultimate judgment regarding appropriateness of any specific therapy must be made by the physician and patient, in light of the individual circumstances presented by the patient, available diagnostic tools, accessible treatment options, resources available, and other relevant factors.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: Guideline was not adapted from another source.

DATE RELEASED

1995 (revised 2007 Apr)

GUIDELINE DEVELOPER(S)

American Academy of Sleep Medicine - Professional Association

SOURCE(S) OF FUNDING

American Academy of Sleep Medicine

GUIDELINE COMMITTEE

Standards of Practice Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the American Academy of Sleep Medicine (AASM) Standards of Practice Committee (SPC) and Board of Directors (BOD) completed detailed

conflict-of-interest statements and were found to have no conflicts of interest with regard to this subject.

GUIDELINE STATUS

This is the current release of this guideline.

This guideline updates a previous version: American Sleep Disorders Association. Practice parameters for the use of actigraphy in the clinical assessment of sleep disorders. Sleep - Europe 1995 May;18(4):285-7.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the American Academy of Sleep Medicine (AASM) Web site.

Print copies: Available from the Standards of Practice Committee, American Academy of Sleep Medicine, One Westbrook Corporate Center, Suite 920, Westchester, IL 60154. Web site: www.aasmnet.org.

AVAILABILITY OF COMPANION DOCUMENTS

None available

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on April 25, 1999. The information was verified by the guideline developer on May 24, 1999. This NGC summary was updated by ECRI Institute on May 25, 2007.

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